AMENDMENTS TO CLAIMS

1.   (CURRENTLY AMENDED)A method for maximizing the benefits of packing and fragmentation in a communications system having a base station and at least one node, the method comprising the steps of:

receiving service data packets ~~at a base station~~ from one or more data sources in one or more formats ~~a first or a second format~~;

converting the service data packets ~~in the first or second formats~~ into data packets in a third format by packing and fragmenting the service data packets ~~in the first or second formats~~ into data packets in the third format in a coordinated manner by

mapping a first service data packet or a fragment of a first service data packet to the payload of a current data packet in a third format,

determining whether a second service data packet is larger than the remaining payload of the current data packet in a third format,

if the second service data packet is not larger than the remaining payload of the current data packet in a third format, then mapping the second service data packet to the remaining payload of the current data packet in a third format,

if the second service data packet is larger than the remaining payload of the current data packet in a third format, then fragmenting the second service data packet into at least two fragments and mapping the first fragment of the second service data packet to the remaining payload of the current data packet in a third format; and

transmitting ~~to the at least one node~~ the data packets in the third format~~;~~

~~receiving the data packets in the third format in the at least one node and converting the data packets in the third format back into data packets in the first or second formats by unpacking and defragmenting the data packets in the third format; and~~

~~transferring the data packets in the first or second formats to one or more users.~~

2.   (CURRENTLY CANCELLED)

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3.	(CURRENTLY AMENDED)The method of Claim 1 [[2]], wherein the one or more data sources can be the internet, other communications networks, data bases, or any combination thereof.

4.	(CURRENTLY CANCELLED)

5.	(CURRENTLY AMENDED)The method of Claim 1 [[2]], wherein the third ~~packet~~ format is a MAC packet format.

6.	(CURRENTLY AMENDED)The method of Claim 1 [[2]], wherein the <u>one or more formats</u> ~~first format is~~ <u>includes</u> IP.

7.	(CURRENTLY AMENDED)The method of Claim 1 [[2]], wherein the <u>one or more formats includes</u> ~~first packet format is~~ ATM.

8.	(CURRENTLY AMENDED)The method of Claim <u>6</u> [[2]], wherein transmitting is via radio waves in the millimeter bandwidth spectrum

9.	(CURRENTLY AMENDED)The method of Claim 1 [[2]], wherein the <u>service</u> data packets in <u>one or more</u> ~~the first or second~~ formats have control information and converting the <u>service</u> data packets ~~in the first or second formats~~ into data packets in the third format is further accomplished by utilizing the control information from the <u>service</u> data packets ~~in the first or second formats~~ in a header portion of the data packets in the third format ~~while storing the data packets in the first or second formats in a payload portion of the data packets in the second format~~.

10.	(CURRENTLY AMENDED)The method of Claim 9, wherein some of the payload area of the data packets in the third format includes a packing subheader to indicate the length of the <u>service</u> data packet ~~in the first or second formats~~.

11.	(CURRENTLY AMENDED)The method of Claim 9, wherein the header portion contains a plurality of fragmentation control bits to indicate the presence and orientation of

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fragments along with any whole <u>service</u> data packets ~~in the first or second formats~~ in the payload portion.

12. (CURRENTLY AMENDED)The method of Claim 11, wherein fragmentation <u>comprises</u> ~~accomplished by~~ creating a fragment by including less than all of the <u>service</u> data packet ~~in the first or second formats~~ in a corresponding data packet in the third format and by indicating this in the fragmentation control bits.

13. (ORIGINAL) The method of Claim 11, wherein the plurality of fragmentation control bits comprises two bits.

14. (ORIGINAL) The method of Claim 11, wherein the plurality of fragmentation control bits comprises more than two bits.

15. (ORIGINAL) The method of Claim 1, wherein fragmentation and packing are done in the same layer.

16. (CURRENTLY AMENDED)The method of Claim <u>1</u> [[2]], wherein fragmentation and packing are done by the same processor.

17. (CURRENTLY AMENDED)The method of Claim 12, wherein fragmentation <u>and packing further</u> comprises <u>mapping</u> an end fragment at the beginning of the payload, a first fragment at the end of the payload or a lone continuing fragment in the payload.

18. (CURRENTLY AMENDED)The method of Claim 12, wherein fragmentation comprises any combination of whole <u>service</u> data packets ~~in the first or second formats~~ and fragments of <u>service</u> data packets ~~in the first or second formats~~, wherein the possible combinations allowed are limited ~~only~~ by the number of fragmentation control bits utilized in the header portion.

19. (CURRENTLY AMENDED)The method of Claim <u>1</u> [[2]], further comprising utilizing information regarding the packing and fragmentation as part of an algorithm for the allocation of bandwidth.

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20-21.   (PREVIOUSLY CANCELLED).

22.   (CURRENTLY CANCELLED)

23.   (CURRENTLY AMENDED) An improved method for converting incoming information packets in a first or a second format into information packets in a third format in an information communications system where each of the incoming information packets is associated with a connection and there are a plurality of connections, the method comprising:

preparing a first information packet in the third format having a payload for storing data and a header ~~for storing~~ having control information identifying a first connection;

storing a first incoming information packet associated with the first connection or a fragment of a first incoming information packet associated with the first connection in the payload of the first information packet in the third format;

receiving ~~an~~ a second incoming information packet associated with the first connection;

determining if the second incoming information packet is smaller than the available payload in the first information packet in the third format;

storing the second incoming information packet in the payload of the first information packet in the third format if the second incoming information packet is smaller than the available payload in the first information packet in the third format, otherwise fragmenting the second incoming information packet by storing only that amount of the second incoming information packet that will fit in the first information packet in the third format in the payload of the first information packet of a third format and storing the remainder of the second incoming information packet in the payload of a subsequent information packet in the third format;

updating the header of the first information packet in the third format to indicate the presence and location of an incomplete information packet if an incomplete information packet is present;

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preparing a subsequent information packet in the third format having a payload and a header;

storing control information about any existing remainder of the <u>second</u> incoming information packet in the header of the subsequent information packet in the third format;

storing any existing remainder of the <u>second</u> incoming information packet in the payload of the subsequent information packet in the third format if the available payload is large enough to store the remainder of the <u>second</u> incoming information packet, otherwise fragmenting the remainder of the <u>second</u> incoming information packet by storing only that portion of the remainder of the <u>second</u> incoming information packet that will fit in the available payload of the subsequent information packet in the third format in the payload of the subsequent information packet in the third format and storing the remainder of the incoming <u>second</u> information packet in the payload of a subsequent information packet in the third format <u>having control information identifying the first connection in its header</u> ; and

updating the header of the subsequent information packet in the third format to indicate the presence and location of an incomplete information packet in the payload if an incomplete information packet is present.

24.   (CURRENTLY AMENDED) A   communications   system   that   transfers information packets in a first or a second format over a communications link in a third format comprising:

~~a base station, the base station comprising:~~

a backhaul interface configured to receive the information packets in the first or second formats from at least one data source;

a ~~base station~~ converter configured to convert the information packets in the first or second formats to the information packets in a third format by packing and fragmenting the information packets in the first format in a coordinated manner <u>by</u>

<u>mapping a first information packet in the first or second formats or a fragment of a first information packet in the first or second formats to the payload of a current information packet in a third format,</u>

<u>determining whether a second information packet in the first or second formats is larger than the remaining payload of the current information packet in a third format,</u>

<u>if the second information packet in the first or second formats is not larger than the remaining payload of the current information packet in a third format, then mapping the second information packet in the first or second formats to the remaining payload of the current information packet in a third format,</u>

<u>if the second information packet in the first or second formats is larger than the remaining payload of the current information packet in a third format, then fragmenting the second information packet in the first or second formats into at least two fragments and mapping the first fragment to the remaining payload of the current information packet in a third format;</u> <u>and</u>

a ~~base station~~ transmitter configured to transmit the information packets in the third format to at least one <u>recipient</u> ~~node.;~~

~~the at least one node comprising;~~

~~a node receiver configured to receive the information packets in the third format;~~

~~a node converter configured to convert the information packets in the third format back to the information packets in the first or second formats~~

~~a connection interface configured to transfer the information packets in the first or second formats to one or more users.~~

25.   (CURRENTLY CANCELLED)

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26.   (CURRENTLY AMENDED) The system of Claim 24 [[25]], wherein the base station further comprising comprises:

a modem configured to modulate information onto analog signals and demodulate information from analog signals;

an IF-RF module configured to convert an intermediate frequency signal to a radio frequency signal; and

an antenna configured to transmit and receive radio frequency signals;.

a communications processor configured to convert the information packets in the first or second formats into information packets in the third format by packing and fragmenting the information packets in the first or second formats into information packets in the third format in a coordinated manner, and also configured to convert the information packets in the third format back into the information packets in the first or second formats; and

a backhaul interface and an input/output control both of which are cooperatively configured to provide two-way communication of the information packets in the first or second formats with the at least one data source.

27.   (CURRENTLY CANCELLED)

28.   (CURRENTLY CANCELLED)

29.   (CURRENTLY AMENDED) The system of Claim 24 [[27]], wherein the data packets in the first or second formats have control information and converting the data packets in the first or second formats into data packets in the third format is further accomplished by utilizing the control information from the data packets in the first or second formats in a header portion of the data packets in the third format while storing the data packets in the first or second formats in a payload portion of the data packets in the third format.

30.   (ORIGINAL) The system of Claim 29, wherein some of the payload area of the data packets in the third format comprises a packing subheader to indicate the length of the data packet in the first or second formats.

31.   (ORIGINAL) The system of Claim 30, wherein the header portion contains a plurality of fragmentation control bits to indicate the presence and location of fragments along with any whole data packets in the first or second formats in the payload portion.

32.   (CURRENTLY CANCELLED)

33.   (CURRENTLY AMENDED) The system of Claim 31, <u>wherein</u> the plurality of fragmentation control bits comprises more than two bits.

34.   (CURRENTLY AMENDED) The system of Claim <u>24</u> [[27]], wherein fragmentation and packing are done in the same layer.

35.   (CURRENTLY AMENDED) The system of Claim <u>24</u> [[27]], wherein fragmentation and packing are done by the same processor.

36.   (ORIGINAL) The system of Claim 31, wherein fragmentation comprises either an end fragment at the beginning of the payload, a beginning fragment at the end of the payload or a lone continuing fragment in the payload.

37.   (CURRENTLY CANCELLED)

38.   (CURRENTLY AMENDED) The system of Claim <u>24</u> [[27]], wherein the benefits of packing and fragmentation are further maximized by utilizing information regarding the packing and fragmentation as part of an algorithm for the allocation of bandwidth.

39.   (CURRENTLY AMENDED) A communications system for transferring incoming <u>service data units</u> ~~data packets~~ in a first format or a second format over a communications link in <u>protocol data units</u> ~~data packets~~ in a third format ~~using a base station and at least one node~~ comprising:

      ~~the base station comprising;~~

         means for providing the incoming <u>service data units</u> ~~data packets to a base station~~ from one or more data sources;

means for converting the incoming service data units ~~data packets~~ into protocol data units ~~data packets~~ in the third format by packing and fragmenting the incoming service data units ~~data packets~~ in a coordinated manner by

mapping a first service data unit or a fragment of a first data unit packet to the payload of a current protocol data unit,

if the second service data unit is not larger than the remaining payload of the current protocol data unit, then mapping the second service data unit to the remaining payload of the current protocol data unit,

if the second service data unit is larger than the remaining payload of the current protocol data unit, then fragmenting the second service data unit into at least two fragments and mapping the first fragment of the second service data unit to the remaining payload of the current protocol data unit; and

means for wirelessly transmitting ~~to the at least one node~~ the protocol data units ~~data packets in the third format~~;

~~the at least one node comprising;~~

~~means for receiving the data packets in the third format in the at least one node and converting the data packets in the third format back into the incoming data packets by unpacking and defragmenting the data packets in the third format;~~

~~means for transferring the incoming data packets to one or more users;~~

~~means for providing incoming data packets to at least one node from the one or more users;~~

~~means for converting the incoming data packets into data packets in the third format by packing and fragmenting the incoming data packets in a coordinated manner;~~

~~means for transmitting to the base station the data packets in the third format; and~~

~~the base station further comprising;~~

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~~means for receiving the data packets in the third format in the base station and converting the data packets in the third format back into the incoming data packets by unpacking and defragmenting the data packets in the third format; and~~

~~means for transferring the incoming data packets to the one or more data sources.~~

40.   (CURRENTLY AMENDED) The system of Claim 39, ~~wherein the base station further comprises~~ further comprising

a modem configured to modulate information onto analog signals and demodulate information from analog signals; and

an IF-RF module configured to convert an intermediate frequency signal to a radio frequency signal[[;]]

~~an antenna configured to transmit and receive radio frequency signals;~~

~~a communications processor configured to convert the incoming data packets into data packets in the third format by packing and fragmenting the incoming data packets into data packets in the third format in a coordinated manner, and also configured to convert the data packets in the third format back into the incoming data packets; and~~

~~a backhaul interface and an input/output control, both of which are cooperatively configured to provide two-way communication of the incoming data packets with the at least one data source.~~

41.   (CURRENTLY CANCELLED)

42.   (CURRENTLY AMENDED)   The system of Claim <u>39</u> [[41]], wherein the <u>protocol</u> data <u>units</u> ~~packets~~ of the third format further comprise a header portion configured to contain one or more fragmentation control bits.

43.   (CURRENTLY AMENDED) The system of Claim 42, wherein the <u>protocol</u> data <u>units</u> ~~packets~~ in the third format further comprise a payload portion for containing the incoming <u>source data units</u> ~~data packets~~ or fragments thereof.

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44.   (CURRENTLY AMENDED)The system of Claim 43, wherein some of the payload area ~~of the data packets in the third format~~ comprises a packing subheader for each fragment or incoming <u>source data unit</u> ~~data packet~~ contained in the payload portion to indicate the length of the fragment or incoming <u>source data unit</u> ~~data packet~~ .

45.   (CURRENTLY CANCELLED)

46.   (PREVIOUSLY CANCELLED).

47.   (NEW) The method of claim 1, wherein if the mapping of the first service data packet or a fragment of a first service data packet to the payload of a current data packet in a third format fills the payload of the current data packet in third format, then begin preparing a new data packet in a third format.

48.   (NEW) The method of claim 1, wherein if the second service data packet is smaller than the remaining payload of the current data packet in a third format, then mapping the second service data packet to the remaining payload of the current data packet in a third format and processing a third service data packet to fill the remaining payload in the current data packet in a third format.

49.   (NEW) The method of claim 1, wherein the current data packet in a third format includes a header portion with a connection identifier which identifies the destination to which the current data packet in a third format is to be delivered and only service data packets associated with the same connection identifier are mapped to the payload of the current data packet in a third format.

50.   (NEW) A method of transmitting packets of information in a first or a second format (service data units) over a communications link that utilizes packets of information in a third format (protocol data units) having a payload and a header with fragmentation control bits, the method comprising:

        (a) begin preparing a current protocol data unit;

(b) identify a current service data unit or a current fragment of a service data unit that is next for processing;

(c) determine whether the current service data unit or current fragment is larger than the space available in the payload of the current protocol data unit;

(d) if the current service data unit or current fragment is larger than the space available in the payload of the current protocol data unit, then

fragment the current service data unit or current fragment into first and second fragments,

map the first fragment to fill the space available in the payload of the current protocol data unit,

store the second fragment of the current service data unit or current fragment,

adjust the fragmentation control bits in the header of the current protocol data unit to indicate the presence of a fragment, and

return to step (a) to begin preparing the next protocol data unit; and

(e) if the current service data unit or current fragment is not larger than the space available in the payload of the current protocol data unit, then

map the current service data unit or current fragment to the space available in the payload of the current protocol data unit,

if there is still space available in the payload of the current protocol data unit, return to step (b),

if there is no more space available in the payload of the current protocol data unit, return to step (a).

51.   (NEW) The method of claim 50 wherein the current protocol data unit includes a header portion with a connection identifier which identifies the destination to which the current protocol data unit is to be delivered and the step of identify a current service data unit or a current fragment of a service data unit that is next for processing comprises only identifying such service data units or fragments that are associated with the same connection identifier.

52.   (NEW) The method of claim 50 wherein mapping a fragment to the payload of the current protocol data unit further comprises setting fragmentation bits in a header portion of the current protocol data unit to indicate the presence of a fragment.